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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|--|-------------|-----------------------|--------------------------|------------------|
| 10/512,127   | 10/11/2004  | Kiyoshi Hashimotodani | 5077-000225/NP           | 8444             |
| 27572  | 7590        | 10/03/2005            |                          |                  |
| HARNESS, DICKEY & PIERCE, P.L.C.<br>P.O. BOX 828<br>BLOOMFIELD HILLS, MI 48303 |             |                       | EXAMINER<br>TRAN, THUY V |                  |
|  |             |                       | ART UNIT<br>2821         | PAPER NUMBER     |

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/512,127

Applicant(s)

HASHIMOTODANI ET AL. 

Examiner

Thuy V. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/11/2004 incl. preliminary amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-7 and 10-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7 and 10-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/11/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This is a response to the Applicants' filing on 10/11/2004 and the preliminary amendment concurrently filed therewith. In virtue of this amendment:

- Claims 1-15 were originally filed;
- Claims 4, 8-9, and 15 are canceled; and thus,
- Claims 1-3, 5-7, and 10-14 are now presented in the instant application.

#### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Inventorship***

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

#### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 10/11/2004 is not fully in compliance with the provisions of 37 CFR 1.98. Accordingly, the information disclosure statement is being partially considered by the examiner.

### ***Drawings***

4. The drawings submitted on 10/11/2004 including the replacement sheets of Figs. 12 and 13 are accepted.

### ***Specification Objections***

5. The abstract of the disclosure is objected to because of the following informalities:

Line 7, “[mm]” should be changed to --mm--.

Correction is required. See MPEP § 608.01(b).

6. The specification of the disclosure is objected to because of the use of the brackets to enclose the length unit “mm”.

For instance, page 6, paragraph [0013], line 3, “[mm]” should be changed to --mm--.

Appropriate correction is required.

- *Applicants are noted that there are a lot of similar errors in the specification. Applicants' cooperation is requested in correcting any errors of which applicants may become aware in the specification.*

### ***Claim Objections/ Minor Informalities***

7. Claims 1-2, 5-6, 12-14 are objected to because of the following informalities:

Claim 1, line 14, “the” should be changed to --a--;

Claim 1, line 15, “the” (first occurrence) should be changed to --a--;

Claim 1, line 18, “the” (first occurrence) should be changed to --a--;

Claim 1, line 20, “the” (first occurrence) should be changed to --a--;

Claim 1, line 22, “the” (first and second occurrences) should be changed to --a--; “the” (fourth occurrence) should be changed to --an--;

Claim 1, line 30, “[mm]” should be changed to --mm--;

Claim 1, line 33, “the” (first and second occurrences) should be changed to --a--;

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Claim 1, line 34, "the" (second occurrence) should be changed to --a--;

Claim 2, line 3, "[mm]" should be changed to --mm--;

Claim 5, line 14, "the" should be changed to --a--;

Claim 5, line 15, "the" (first occurrence) should be changed to --a--;

Claim 5, line 18, "the" (first occurrence) should be changed to --a--;

Claim 5, line 20, "the" (first occurrence) should be changed to --a--;

Claim 5, line 22, "the" (first and second occurrences) should be changed to --a--; "the" (fourth occurrence) should be changed to --an--;

Claim 5, line 26, "the" (first occurrence) should be changed to --a--;

Claim 5, line 30, "[mm]" should be changed to --mm--;

Claim 5, line 33, "the" (first and second occurrences) should be changed to --a--;

Claim 6, line 3, "[mm]" should be changed to --mm--;

Claim 12, line 5, "the" (second occurrence) should be changed to --a--;

Claim 13, line 11, "the" should be changed to --a--;

Claim 13, line 12, "the" (first occurrence) should be changed to --a--;

Claim 13, line 14, "the" (first occurrence) should be changed to --a--;

Claim 13, line 16, "the" (first and second occurrences) should be changed to --a--; "the" (fourth occurrence) should be changed to --an--;

Claim 13, line 20, "the" (first occurrence) should be changed to --a--;

Claim 13, line 21, "the" (second occurrence) should be changed to --a--;

Claim 13, line 22, "the" (first occurrence) should be changed to --a--;

Claim 13, line 23, "[mm]" should be changed to --mm--;

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Claim 13, line 26, "the" (first occurrence) should be changed to --a--;

Claim 14, line 11, "the" should be changed to --a--;

Claim 14, line 13, "the" should be changed to --a--;

Claim 14, line 15, "the" (first occurrence) should be changed to --a--;

Claim 14, line 17, "the" (first and second occurrences) should be changed to --a--; "the" (fourth occurrence) should be changed to --an--;

Claim 14, line 21, "the" (first occurrence) should be changed to --a--;

Claim 14, line 22, "the" (second occurrence) should be changed to --a--; and

Claim 14, line 25, "[mm]" should be changed to --mm--; and

Claim 14, line 28, "the" (first occurrence) should be changed to --a--.

Appropriate correction is required.

***Claim Objections/ Improper Dependent***

8. Claims 10-12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

*The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.*

10. Claims 1-3, 5-7, and 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, the inequality " $\Delta h \leq 1.15 \times D_c + 1.25$ " recited in line 29 renders the claim indefinite since it is not clear what the unit of  $D_c$  is. Clarification is required.

Claims 2-3 are also rejected under 35 U.S.C. 112, second paragraph, since they are dependent on claim 1.

With respect to claim 5, the inequality " $\Delta h \leq 1.92 \times D_c - 22.4$ " recited in line 29 renders the claim indefinite since it is not clear what the unit of  $D_c$  is. Clarification is required.

Claims 6-7 and 10-12 are also rejected under 35 U.S.C. 112, second paragraph, since they are believed to be dependent on claim 5.

With respect to claim 13, the inequality " $\Delta h \leq 1.15 \times D_c + 1.25$ " recited in line 22 renders the claim indefinite since it is not clear what the unit of  $D_c$  is. Clarification is required.

With respect to claim 14, the inequality " $\Delta h \leq 1.92 \times D_c - 22.2$ " recited in line 24 renders the claim indefinite since it is not clear what the unit of  $D_c$  is. Clarification is required.

***Allowable Subject Matter***

11. Claims 1 and 5 would be allowable if (i) rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action, and (ii) corrected to overcome the objections set forth in this Office Action.

12. Claims 2-3 and 6-7 would be allowable if corrected to overcome the objections set forth in this Office Action since they are dependent on claims 1 and 5 respectively.

13. Claims 10-12 would be allowable if corrected to overcome the objections set forth in this Office Action since they are thought to be dependent on claims 5.

14. The following is a statement of reasons for the indication of allowable subject matter:

Prior art fails to disclose or fairly suggest:

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- A compact self-ballasted electrode-less discharge lamp wherein a center portion of a portion around which the coil is wound in the longitudinal direction of the core is positioned within a range that is apart from a plane on which the largest diameter of the bulb is located by a distance from not less than 8mm to not more than 20mm toward the ballast circuit side, in combination with the remaining claimed limitations as called for in independent claim 1 (claims 2-3 would be allowable since they are dependent on claim 1); and
- A compact self-ballasted electrode-less discharge lamp wherein: a largest diameter of the bulb is set in a range from not less than 55 mm to not more than 75 mm; a bulb wall loading of the bulb during a stable lighting operation is set in a range from not less than 0.05 W/cm<sup>2</sup> to less than 0.07 W/cm<sup>2</sup>; a ratio (h/D) of a height (h) of the bulb based upon an end face of the opening section in the recessed portion to the largest diameter (D) of the bulb is set in a range from not less than 1.0 to not more than 1.3; and the excitation coil is constituted by a core and a coil wound around the core; and a center portion of a portion around which the coil is wound in the longitudinal direction of the core is virtually positioned on a plane within which the largest diameter of the bulb is located, in combination with the remaining claimed limitations as called for in independent claim 5 (claims 6-7 and 10-12 would be allowable since they are believed to be dependent on claim 5).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:



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*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

16. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soules et al. (U.S. Patent No. 5,959,405).

With respect to claim 13, as to the best interpretation, Soules et al. discloses, in Figs. 1-2, a compact self-ballasted electrode-less discharge lamp comprising (1) a bulb [16] filled with discharge gas containing mercury enclosed in the bulb in the form of mercury element (see col. 2, line 38), not in the form of amalgam, and a rare gas (see col. 2, line 38), and which has a recessed portion (see Figs. 1-2); (2) an excitation coil [24] inserted in the recessed portion; (3) a ballast circuit [28] (see Fig. 1) which supplies high frequency power to the excitation coil; wherein: the bulb [16] has a virtually spherical shape or a virtually ellipsoidal shape; the recessed portion (see Figs. 1-2) has an opening section on the ballast circuit side, and has a tube shape with a virtually round shape in a cross section thereof; a largest diameter of the bulb is set in a range of 78 mm (which is from not less than 60 mm to not more than 90 mm as claimed); supposing that a distance between a top face of the recessed portion positioned on a side opposite to the opening section of the recessed portion and a top portion of the bulb facing a top face of the recessed portion is  $\Delta h$ , and that a diameter of a portion positioned on a side opposite to the opening section of the recessed portion is  $D_c$ , the following relationship is satisfied:  $\Delta h \leq 1.15 \times D_c + 1.25$  mm (calculated from the dimensions shown in Fig. 2), and the diameter  $D_c$  of a portion positioned on the side opposite to the opening section of the recessed portion is greater than the diameter of a portion corresponding to virtually a center portion of the recessed portion

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in the longitudinal direction of the excitation coil (see Figs. 1-2). Soules et al. does not teach a bulb wall loading in a range from not less than 0.07 W/cm<sup>2</sup> to not more than 0.11 W/cm<sup>2</sup>, and a ratio ( $h/D$ ) of the height  $h$  of the bulb to the largest diameter  $D$  of the bulb in a range of not less than 1.0 to not more than 1.3. In other words, all of these involve an improved shape of the bulb. However, Soules et al. teaches that reducing the height of the bulb can save more space for the ballast as well as cost savings and such a height reduction does not significantly affect efficiency or increasing wall loading (see col. 1, lines 53-67). Therefore, for the stated purposes, to modify the electrode-less discharge lamp of Soules et al. by reducing the dimensions of the bulb, or more specifically, the bulb loading and the ratio of the height of the bulb to the largest diameter of the bulb, to a range as claimed, would have been deemed obvious to a person skilled in the art.

With respect to claim 14, as to the best interpretation, Soules et al. discloses, in Figs. 1-2, a compact self-ballasted electrode-less discharge lamp comprising (1) a bulb [16] filled with discharge gas containing mercury enclosed in the bulb in the form of mercury element (see col. 2, line 38), not in the form of amalgam, and a rare gas (see col. 2, line 38), and which has a recessed portion (see Figs. 1-2); (2) an excitation coil [24] inserted in the recessed portion; (3) a ballast circuit [28] (see Fig. 1) which supplies high frequency power to the excitation coil; wherein: the bulb [16] has a virtually spherical shape or a virtually ellipsoidal shape; the recessed portion (see Figs. 1-2) has an opening section on the ballast circuit side, and has a virtually cylinder shape with a virtually round tube shape in a cross section thereof; supposing that a distance between a top face of the recessed portion positioned on a side opposite to the opening section of the recessed portion and a top portion of the bulb facing a top face of the recessed portion is  $\Delta h$ , and that a diameter of a portion positioned on a side opposite to the opening

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section of the recessed portion is  $D_c$ , the following relationship is satisfied:  $\Delta h \leq 1.92 \times D_c - 22.4$  mm (calculated from the dimensions shown in Fig. 2), and the diameter  $D_c$  of a portion positioned on the side opposite to the opening section of the recessed portion is greater than the diameter of a portion corresponding to virtually a center portion of the recessed portion in the longitudinal direction of the excitation coil (see Figs. 1-2). Soules et al. does not teach (i) a largest diameter of the bulb is set in a range of 55mm to not more than 75 mm, (ii) a bulb wall loading of the bulb during a stable lighting operation is set in a range from not less than 0.05 W/cm<sup>2</sup> to less than 0.07 W/cm<sup>2</sup>, and (iii) a ratio ( $h/D$ ) of the height  $h$  of the bulb to the largest diameter  $D$  of the bulb in a range of not less than 1.0 to not more than 1.3. In other words, all of these involve an improved shape of the bulb. However, Soules et al. teaches that reducing the height or size of the bulb can save more space for the ballast as well as cost savings and such a height reduction does not significantly affect efficiency or increasing wall loading (see col. 1, lines 53-67). Therefore, for the stated purposes, to modify the electrode-less discharge lamp of Soules et al. by reducing the dimensions of the bulb, or more specifically, the bulb loading and the ratio of the height of the bulb to the largest diameter of the bulb, to a range as claimed, would have been deemed obvious to a person skilled in the art.

***Citation of relevant prior art***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art Chandler et al. (U.S. Patent No. 6,768,248 B2) discloses an electrodeless lamp.

Prior art Kurachi et al. (U.S. Patent No. 6,650,068 B2) discloses an electrodeless lamp.

Prior art Kurachi et al. (U.S. Patent No. 6,642,671 B2) discloses an electrodeless lamp.

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Prior art Soules et al. (U.S. Patent No. 5,917,291) discloses an electrodeless lamp.

Prior art Roberts et al. (U.S. Patent No. 5,461,284) discloses an electrodeless lamp.

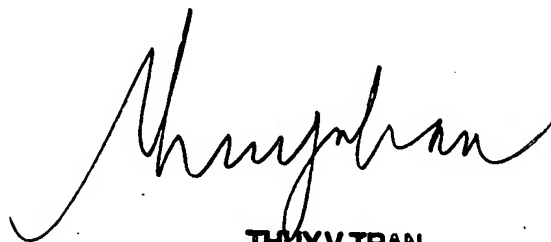
***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuy V. Tran whose telephone number is (571) 272-1828. The examiner can normally be reached on M-F (8:00 AM -5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

09/29/2005



**THUY V. TRAN  
PRIMARY EXAMINER**